

# Atlantic Richfield Company

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\$QWKRQ\ L 5◀ L %URZQ  
3URMHWL 0DQDJHJL 01QALQJ L

+ L &HQWHUSRLOWH L 'ULYH L  
/D L 3DOPDX L &\$ L L ! ! T + P !!  
211LRH L L σ ↑ → □ L ↑ L +  
)D[ L L σ → P + □ L ↑ L + →  
(+ PDLO L \$QWKRQ\ L %URZQ#ES L FRPL L

2FWAREHUL P T Ø L + !! P → L

OV\ L -XOLH L 6XOOLYDQ L

6) ' + → + + L

86(3\$ L 5HJLRQ L L

→ ↑ L +DZAKRULQH L 6NUHHW L

6DQ L )UDQFLVFRQ L &\$ L L + P !! ↑ L

5( L :DWHL ODWHULDOL 211+ 6LWH L 6KLSPHQW 1RAL1LFDWLRQ L L 0LVFHODQHRXV L :DWHL DQG L \$6% L DC  
7UHDAPHQW \*HQHJDWHLG L VROLGV L L  
/HYLDWKDQ L 0LQH L \$OSLQH L &RXQW M L &DOLIRUQLD

'HDL L OV\ L 6XOOLYDQ L

\$WODQWLFL 5LFK1LHOG L &RPSDQ\ L σ ≥ \$WODQWLFL 5LFK1LHOG ¥ □ L LV L VXEPLWLQJ L WKLV L CHWHL L QL DFFRU  
T + L σ ≥ 211+ 6LWH L 6KLSPHQW ¥ □ L RI L WKH L \$GPLQLWLWDLYH L 6WUDPHQW \$JUHPHQW DQG L 2UGHU L RQ  
\$VALRQ M L &(5&/ \$ L 'RFNHW L 1R L L + !! + L σ HI IHWALYH L -DQXDU L + P Ø L + !! + L σ WKH L  
ZULWHLQ L QRAL1LFDWLRQ L RI L DQ L RI L + V1WH L VKLSPHQW L RI L :DWHL ODWHULDOL σ DV L GHILQHG L LQ L WKH L \$  
ZDWHL PDQDJHPHQW IDFLOWM L GHMFULEHGL DV L IRORZV L

♂ P □ L 1DPHL DQG L ORFDWLRQ L RI L IDFLOWM ODWHULDOL LV L WR L EH L VKLSSHG L	♂ P L 211+ 6LWH L 6KLSPHQW L RI L 3◀ 24 L %R[ L ↑ → ← L %DWHL L 19 L ← !! !! T L 3KRQH L P L ← !! !! ← + T L ← T + T L
♂ + □ L 7\SH L DQG L 4XQWAM L RI L :DWHL ODWHULDOL 7\SH L DQG L 4XQWAM L RI L :DWHL ODWHULDOL VKLSSHG L	♂ P L 211+ 6LWH L 6KLSPHQW L RI L FRQMLWLQJ L RI L JHQHJDWHLG L VROLGV L IURP L SVSHQ L 6HS L %LRUHDFWRU L σ \$6% □ L 7UHDAPHQW 6\WHP L L L :DWHL ODWHULDOL ZDV L FROOHFWHL L QL VL [ L + ↑ L FXELFL \DUGL L OLQHG L ILOWH L ELQ\ L \$SSUR[LPDWHO\ L + !! FXELFL \DUGL L :DWHL ODWHULDOL ZLOO L EH L VKLSSHG L

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:DWHL ODHULDO 211+ 6LWH 6KLSPHQW 1RNL LFDALRQL + L + '6L 7UHDAPHQW \*HQHLDWHL 6ROLGV L

2FREHU L ¶ T Ø L + !! ¶ → L

3DJH L + L RI L + L

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	6KLSPHQW T L LVL PLVPHOODQRXVL ZDWHL PDWHLDOVL ♂ ZDWHL L UHMXOALQJ L TURPL YDULRXVL VLWH RSHUDALRQVL DQG L PDLQWHDQFH L DFLYIWLHV DMRFLDWHL ZWKL DFLG L GUDLQDJH L \$' L WUHDAPHQW DW WKH /HYLDWKDQL OLQH L 6LWH L VHH L \$WDFKPHQW & □◀ L L ¶ → L FRQNDLQHUVL ♂ JDORQVL DQG L RQH L DW T !! L JDORQV L FRQNDLQJ L ZD ZLOO L EH L VKLSSHG L
♂ T □ L ([SHFWHG VFKHGXCH L IRU L VKLSPHQW ODWHLDO L	6KLSPHQW T L LVL WUHDAPHQW JHQHLDWHL ZDWHL FRQMLWLQJ L RI L SUHFLSLWDWHL VROLGV L TURPL OLPH L WUHDAPHQW RI L DFLG L GUDLQDJH L TURPL WKH &KDQQHOL 8QGHUGDLQ L DQG L 'HOMD L 6HHS L XVLQJ L WKH +LJK L 'HQVLM L 6OXGJH L ♂ +'6 L 7UHDAPHQW 6\WHP L WKH L :DWHL ODHULDO ZDVL FROOHFWHL LQ L WKH L + L FXELF \DUG L IDEUQHG L ILOWHU L ELQK L L L L \$SSUR[LPDWHO L T !! FXELF \DUG L RI L :DWHL ODHULDO ZLOO L EH L VKLSSHG L
♂ + □ L OHWKRG L RI L 7UDQ L	6KLSPHQW T L LVL VRKHGCHG L WR L EH L VKLSSHG L LQ L WR L RQ L 2FREHU L ¶ T Ø L + !! ¶ → L DQG 2FREHU L ¶ ← L
	6KLSPHQW T L LVL VRKHGCHG L WR L EH L VKLSSHG L LQ L WR L RQ L 2FREHU L ¶ T Ø L + !! ¶ → L DQG 2FREHU L ¶ ← L
♂ + □ L OHWKRG L RI L 7UDQ L	6KLSPHQW T L LVL VRKHGCHG L WR L EH L VKLSSHG L RQ L 2FRE ¶ T !! Ø L L

,Q L DQGLWLRL WR L (3\$ Ø L \$WODQWLFL 5LFKILHOG L LVL SURYLGLQJ L D L FRSV L RI L WKLV L ZULWHLQ L QRAL L FDFW  
(ULFL 1RDFN Ø L ZWKL WKH L 1HYDGD L 'LYLVLRLQ L RI L (QYLURQPHQWDO L 3URWHLRLQ L %XUHDXL RI L :DWHL ODDQ  
OHWWHU L GDWHL L )HEUXDU L ¶ T Ø L + !! ! Ø L \$WODQWLFL 5LFKILHOG L UHTXLWHL L (3\$ Ø V L FRSV L LFDALRQL V  
LQ L %HDWW Ø L 1HYDGD L LVL RSHUDALQJ L LQ L FRPSOLDQFH L ZWKL WKH L UHTXLWHLQW L RI L &(5/\$ L 6HFLP  
¶ T + ¶ Ø G Ø T Ø Ø L ÜDQ L !!!!◀4& L )◀ L 5◀ L

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5HJXODWU L 6ADAXV L

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\$WODQWLFL 5LFKILHOG Ø V L ZDWHL PDQDJHFWQ L FRQWDFARU Ø L 3RQHUL (QYLURQPHQWDO L 6HJYLHM Ø L WK  
GLVSRVDO L IDFLQW Ø L DQG L WKH L 'HOHQCR L HGRQ L UHF\FLQJ L IDFLQW L KDYH L FODWL L HGL WKH L \$6% L  
7UHDAPHQW Ø L DQG L OLVPHOODQRXVL :DWHL ODHULDO DVL GHMULEHG L EHORZ L

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\$6% L 7UHDAPHQW \*HQHLDWHL 6ROLGV L ♂ 6KLSPHQW L ¶ L DQG L + □ L

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\$ L FRPSRMWH L VDPSOH L RI L WKH L \$6% L WUHDAPHQW JHQHLDWHL VROLGV L ZDVL FROOHFWHL E \ L %URDGEHQW  
,Q◀ L SHURQQH L RQ L \$XJXW L + L Ø L + !! ¶ → L DQG L VXEPLWHL WR L 7HW L \$PHULD L /DERUDARULM Ø L  
IRU L 7&/3 Ø L 77/& Ø L 67/& Ø L DQG L 63/3 L DQDO\HVL ♂ VHH L \$WDFKPHQW \$ L ± L /DERUDARU L \$QDOWLFD  
7UHDAPHQW \*HQHLDWHL 6ROLGV L ◀ L L %DMHG L XSRQ L \$WODQWLFL 5LFKILHOG Ø V L NQRZOHJH L RI L WKH L KDJU  
FKDUDFWHULWLFL RI L WKH L :DWHL ODHULDO WKH L SURFHV L XHGL WR L JHQHLDWHL WKLV L :DWHL ODHULDO

:DWHL ODHULDO<sup>L</sup> 21+ 6LWHL 6KLSPHQW- 1RNL LFDALRQL + L + '6L 7UHDWPHQW- \*HQHUDWHL 6ROLGV<sup>L</sup>  
2WAREHUL ♀ T ♀ L + !! ♀ → L

3DJH<sup>L</sup> T L RI L + L  
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UHXOWL TURPL D<sup>L</sup> 1DALRQDOL (QYLURQPHQDOL /DERUDARU\ L \$FFUHGLWALRQL 3URJUDPL ♂ ≥ 1(/\$3 ¥ □ L DFFU  
IDFLOLM L ♂ L DQ L WKHL :DWHL ODHULDO<sup>L</sup> LV<sup>L</sup> CRW<sup>L</sup> DL OLWHL KDJDUGRXL ZDWHL RUL DL FKODDFWHLWL  
6XEWLWCHL & L RI L 5&5\$ L RUL DV<sup>L</sup> DL &DOLIRUQLD<sup>L</sup> FKODDFWHLWLFL KDJDUGRXL ZDWHL EDMHG<sup>L</sup> RQ<sup>L</sup> WKHL &  
5HJXODALRQW<sup>L</sup> 7LWCHL + + L 7KLV<sup>L</sup> GHWHPLOCALRQL LVL EDMHG<sup>L</sup> XSRQL WKHL TROORZLQJ L

♀ □ 7KH<sup>L</sup> :DWHL ODHULDO<sup>L</sup> ZDV<sup>L</sup> WHWHL IRUL ZDWHL HMLDFALRQL WHWHL VROXELOM<sup>L</sup> DQG<sup>L</sup> WANDO<sup>L</sup>  
1(/\$3 L DFFUHGLWHL ODERUDARU\ L DQDOWLFDO<sup>L</sup> ODERUDARU\ L 7KH<sup>L</sup> UHXOWL RI L WKHL 7&/30 L 77  
63/3 L DQDOWVHV<sup>L</sup> DUH<sup>L</sup> OHW<sup>L</sup> WKDQL WKHL &DOLIRUQLD<sup>L</sup> &RGH<sup>L</sup> 7LWCHL + + L &DOLIRUQLD<sup>L</sup> &RGH<sup>L</sup> RI L 5  
DQG<sup>L</sup> &RGH<sup>L</sup> RI L )HGLDOL 5HJXODALRQW<sup>L</sup> ♂ &) 5□ L WKUHMROGL OLPLW<sup>L</sup> WKUHHRUH<sup>L</sup> WKHL ZDWHL  
QRQ<sup>L</sup> KDJDUGRXL

+ □ 7KH<sup>L</sup> :DWHL ODHULDO<sup>L</sup> GRHV<sup>L</sup> CRW<sup>L</sup> KDYH<sup>L</sup> WKHL FKODDFWHLWLFL RI L LJQWDELOM<sup>L</sup> XQGHUL + !! L  
:DWHL ODHULDO<sup>L</sup> GRHV<sup>L</sup> CRW<sup>L</sup> KDYH<sup>L</sup> DL 1ODMK<sup>L</sup> SRLQW<sup>L</sup> RI L OHW<sup>L</sup> WKDQL ♀ + !! L GHJUHV<sup>L</sup>)DKUHQH<sup>L</sup>  
FDSDECH<sup>L</sup> RI L VSQNDQHRXV<sup>L</sup> FRPEXWLRQL XQGHUL VWDQDUG<sup>L</sup> SUHMXUH<sup>L</sup> DQG<sup>L</sup> WPSHLDWLUH<sup>L</sup>

† □ 7KH<sup>L</sup> :DWHL ODHULDO<sup>L</sup> GRHV<sup>L</sup> CRW<sup>L</sup> H[KLEIW<sup>L</sup> WKHL FKODDFWHLWLFL RI L FRURVLYW<sup>L</sup> XQGHUL + !! L  
:DWHL ODHULDO<sup>L</sup> KDV<sup>L</sup> DL S+L JUHDWUL WKDQL + + L VWDQDUG<sup>L</sup> XQWVW<sup>L</sup> ♂ V<sup>L</sup> X<sup>L</sup> DQG<sup>L</sup> OHW<sup>L</sup>

‡ □ 7KH<sup>L</sup> :DWHL ODHULDO<sup>L</sup> GRHV<sup>L</sup> CRW<sup>L</sup> H[KLEIW<sup>L</sup> WKHL FKODDFWHLWLFL RI L UHDFAVLYW<sup>L</sup> XQGHUL + !! L  
:DWHL ODHULDO<sup>L</sup> GRHV<sup>L</sup> CRW<sup>L</sup> UHDFW<sup>L</sup> YLRQHQW<sup>L</sup> ZLWK<sup>L</sup> DLUL RUL ZDWHL<sup>L</sup> L VL<sup>L</sup> CRW<sup>L</sup> XQWDECH<sup>L</sup> LQ<sup>L</sup>  
FRQGLALRQW<sup>L</sup> GRHV<sup>L</sup> CRW<sup>L</sup> UHDFW<sup>L</sup> ZLWK<sup>L</sup> ZDWHL<sup>L</sup> RUL FRURVLYH<sup>L</sup> WR<sup>L</sup> SURGXFH<sup>L</sup> WR[LFL JDWHM<sup>L</sup> DQ<sup>L</sup>

↑ □ 7KH<sup>L</sup> :DWHL ODHULDO<sup>L</sup> LV<sup>L</sup> CRW<sup>L</sup> OLWHL DV<sup>L</sup> DL KDJDUGRXL ZDWHL XQGHUL IHGLDOL RUL &DOLIRUQ<sup>L</sup>

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OLVHOODQHRXV<sup>L</sup> :DWHL ODHULDO<sup>L</sup> ♂ 6KLSPHQW- T □ L

)RU<sup>L</sup> WKHL PLVHOODQHRXV<sup>L</sup> ZDWHL PDWULDO<sup>L</sup> L ZDWHL WSH<sup>L</sup> GHMFULSAWRQV<sup>L</sup> DQG<sup>L</sup> FKODDFWHL]DALRQV<sup>L</sup> DU<sup>L</sup>  
\$WDFKPHQW- & L 1RQH<sup>L</sup> RI L WKHL 6KLSPHQW- T L PDWULDO<sup>L</sup> DUH<sup>L</sup> FKODDFWHLWLFL RUL OLWHL KDJDUGRXL

+ '6L 7UHDWPHQW- \*HQHUDWHL 6ROLGV<sup>L</sup> ♂ 6KLSPHQW- + □ L

\$L VDPSCH<sup>L</sup> RI L WKHL + '6L 7UHDWPHQW- JHQHUDWHL :DWHL ODHULDO<sup>L</sup> ZDV<sup>L</sup> FROCHFWHL E\ L %URGEHQW<sup>L</sup>  
SHMRQQHOL RQ<sup>L</sup> 6HSWHPHUL ♀ + !! ♀ → L DQG<sup>L</sup> VXEPLWHL WR<sup>L</sup> 7HW<sup>L</sup> SPHULFD<sup>L</sup> /DERUDARU\ L \$QDOWLFDO<sup>L</sup>  
7&/30 L 77/80 L 67/3 L DQDOWVHV<sup>L</sup> ♂ VHV<sup>L</sup> \$WDFKPHQW% L + L /DERUDARU\ L \$QDOWLFDO<sup>L</sup> 5  
7UHDWPHQW- \*HQHUDWHL 6ROLGV<sup>L</sup> □ %DMHG<sup>L</sup> XSRQL \$WODQNLFL 5LFKI LHDGAVL NQRZOHGUH<sup>L</sup> RI L WKHL KDJDUGRXL  
RI L WKHL :DWHL ODHULDO<sup>L</sup> WKHL SURHFW<sup>L</sup> XHGL WR<sup>L</sup> JHQHUDWHL WKLV<sup>L</sup> :DWHL ODHULDO<sup>L</sup> DQG<sup>L</sup> DQDOWLFDO<sup>L</sup>  
1DALRQDOL (QYLURQPHQDOL /DERUDARU\ L \$FFUHGLWALRQL 3URJUDPL ♂ ≥ 1(/\$3 ¥ □ L DFFUHGLWHL WHWHLQJ<sup>L</sup> II  
:DWHL ODHULDO<sup>L</sup> LV<sup>L</sup> CRW<sup>L</sup> DL OLWHL KDJDUGRXL ZDWHL RUL DL FKODDFWHLWLFL KDJDUGRXL ZDWHL XQ<sup>L</sup>  
5&5\$0 L HYHQ<sup>L</sup> ZLWKRXW<sup>L</sup> WKHL ZDWHL H[HPSAULQV<sup>L</sup> LGQWLT LHL DERYH<sup>L</sup> DQG<sup>L</sup> ♂ LL L WKHL :DWHL ODHULDO<sup>L</sup>  
FKODDFWHLWLFL KDJDUGRXL ZDWHL EDMHG<sup>L</sup> RQ<sup>L</sup> WKHL 67/8 L QLFWH<sup>L</sup> &DOLIRUQLD<sup>L</sup> 67/8 L RI L  
5HJXODALRQW<sup>L</sup> 7LWCHL + + L 7KLV<sup>L</sup> GHWHPLOCALRQL LVL EDMHG<sup>L</sup> XSRQL WKHL TROORZLQJ L

† □ 7KH<sup>L</sup> 1(/\$3 L DFFUHGLWHL ODERUDARU\ L DQDOWLFDO<sup>L</sup> UHXOWL TURPL UHSUHMQDHALYH<sup>L</sup> VDPSCH<sup>L</sup> F  
ODWULDO<sup>L</sup> SURSRMGL<sup>L</sup> IRU<sup>L</sup> RI + VIWHL VKLSPHQW<sup>L</sup> VKRZ<sup>L</sup> WKDW<sup>L</sup> SDUDPHWH<sup>L</sup> FRQFHQWDLRQV<sup>L</sup> DU<sup>L</sup>  
IHGLDOL WR[LFLW<sup>L</sup> FULWULD<sup>L</sup> IRUL 7&/3 L /DERUDARU\ L UHXOWL DOVR<sup>L</sup> VKRZ<sup>L</sup> WKDW<sup>L</sup> WKHL :DWHL  
H[HFG<sup>L</sup> &DOLIRUQLD<sup>L</sup> 77/8 L UHJXODARU\ L WKUHMROGL YDOXH<sup>L</sup> L 1LFNHO<sup>L</sup> ZDV<sup>L</sup> GHWHPFWHL LQ<sup>L</sup> WKHL 6  
VDPSCH<sup>L</sup> DW<sup>L</sup> DL FRQFHQWDLRQL RI L + L PJ<sup>L</sup> / L ZKLFK<sup>L</sup> LVL DERYH<sup>L</sup> WKHL &DOLIRUQLD<sup>L</sup> 67/8 L UH  
YDOXH<sup>L</sup> RI L + !! L PJ<sup>L</sup> / L IRUL WKHL WR[LFLW<sup>L</sup> FKODDFWHLWLFL 2WKHL SDUDPHWH<sup>L</sup> FRQFHQWDLRQ<sup>L</sup>  
ODWULDO<sup>L</sup> ZHUH<sup>L</sup> EHORZ<sup>L</sup> 67/8 L UHJXODARU\ L WKUHMROGL YDOXH<sup>L</sup> L

→ □ 7KH<sup>L</sup> :DWHL ODHULDO<sup>L</sup> GRHV<sup>L</sup> CRW<sup>L</sup> KDYH<sup>L</sup> WKHL FKODDFWHLWLFL RI L LJQWDELOM<sup>L</sup> XQGHUL + !! L  
:DWHL ODHULDO<sup>L</sup> GRHV<sup>L</sup> CRW<sup>L</sup> KDYH<sup>L</sup> DL 1ODMK<sup>L</sup> SRLQW<sup>L</sup> RI L OHW<sup>L</sup> WKDQL ♀ + !! L GHJUHV<sup>L</sup>)DKUHQH<sup>L</sup>  
FDSDECH<sup>L</sup> RI L VSQNDQHRXV<sup>L</sup> FRPEXWLRQL XQGHUL VWDQDUG<sup>L</sup> SUHMXUH<sup>L</sup> DQG<sup>L</sup> WPSHLDWLUH<sup>L</sup>

:DWH<sup>L</sup> ODWHULDO<sup>L</sup> 211+ 6LWH<sup>L</sup> 6KLSPHQW<sup>-</sup> 1RMLI LFDWLRLQ<sup>L</sup> + L + '6<sup>L</sup> 7UHDWPHQW<sup>-</sup> \*HQHUDWHL<sup>L</sup> 6ROLGV<sup>L</sup>

2FREHU<sup>L</sup> ¶ T Ø L + !! ¶ → L

3DJH<sup>L</sup> + L RI<sup>L</sup> + L

L

← □7KH<sup>L</sup> :DWH<sup>L</sup> ODWHULDO<sup>L</sup> GRHV<sup>L</sup> QRW<sup>-</sup> H[KLEIW<sup>L</sup> WKH<sup>L</sup> FKDUDFWHULWLFV<sup>L</sup> RI<sup>L</sup> FRUURVLYW<sup>L</sup> XQGHUL<sup>L</sup> + !!

:DWH<sup>L</sup> ODWHULDO<sup>L</sup> KDV<sup>L</sup> D<sup>L</sup> S+<sup>L</sup> JUHDWUL<sup>L</sup> WKDQ<sup>L</sup> ± ◀ !! L VWDQGDUGL<sup>L</sup> XQWVW<sup>L</sup> ♂ V◀ X◀ □<sup>L</sup> DQGL<sup>L</sup> OHW<sup>L</sup>

□7KH<sup>L</sup> :DWH<sup>L</sup> ODWHULDO<sup>L</sup> GRHV<sup>L</sup> QRW<sup>-</sup> H[KLEIW<sup>L</sup> WKH<sup>L</sup> FKDUDFWHULWLFV<sup>L</sup> RI<sup>L</sup> UHDVFLYW<sup>L</sup> XQGHUL<sup>L</sup> + !!

:DWH<sup>L</sup> ODWHULDO<sup>L</sup> GRHV<sup>L</sup> QRW<sup>-</sup> UHDFW<sup>L</sup> YLROHQW\<sup>L</sup> ZLWK<sup>L</sup> DLUL<sup>L</sup> RUL<sup>L</sup> ZDWHU<sup>L</sup> LV<sup>L</sup> QRW<sup>L</sup> XQWDEOH<sup>L</sup> LQ<sup>L</sup>

FROGLWLRQV<sup>L</sup> GRHV<sup>L</sup> QRW<sup>-</sup> UHDFW<sup>L</sup> ZLWK<sup>L</sup> ZDWHU<sup>L</sup> RUL<sup>L</sup> FRUURVLYH<sup>L</sup> WR<sup>L</sup> SURGXFH<sup>L</sup> WR[LFL<sup>L</sup> JDVMH<sup>L</sup> D<sup>L</sup>

¶ !!7KH<sup>L</sup> :DWH<sup>L</sup> ODWHULDO<sup>L</sup> LV<sup>L</sup> QRW<sup>L</sup> OLWHLG<sup>L</sup> DV<sup>L</sup> D<sup>L</sup> KDJDGRXV<sup>L</sup> ZDWHU<sup>L</sup> XQGHUL<sup>L</sup> IHGUDOL<sup>L</sup> ODZ◀ L

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, I L \RXL KDYH<sup>L</sup> DQ<sup>L</sup> TXHWLRLQ<sup>L</sup> RUL FRPPHQW<sup>V</sup> L SOHDVH<sup>L</sup> IHOL<sup>L</sup> IUH<sup>L</sup> WR<sup>L</sup> FRQNDFW<sup>L</sup> PH<sup>L</sup> DW<sup>L</sup> WKH<sup>L</sup> QPHEH<sup>L</sup>

DW<sup>L</sup> DQWKRQ<sup>L</sup> ▲ EURZQES<sup>L</sup> FRA<sup>L</sup>

L

6LQFHUHO\<sup>L</sup>

L

*Anthony D. Bone*

L

L

\$QWKRQ\ L %URZQ<sup>L</sup>

SURMHFW<sup>L</sup> ODQDJHU<sup>L</sup> OLOLQJ<sup>L</sup>

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(QFORXUHM<sup>L</sup>

\$WDFKPHQW<sup>-</sup> \$L ± L /DERUDWRU\ L \$QDOWLFDO<sup>L</sup> 5HIXOW<sup>L</sup> RI<sup>L</sup> \$6%L 7UHDWPHQW<sup>-</sup> \*HQHUDWHL<sup>L</sup> 6ROLGV<sup>L</sup>

\$WDFKPHQW<sup>-</sup> %L ± L /DERUDWRU\ L \$QDOWLFDO<sup>L</sup> 5HIXOW<sup>L</sup> RI<sup>L</sup> +'6<sup>L</sup> 7UHDWPHQW<sup>-</sup> \*HQHUDWHL<sup>L</sup> 6ROLGV<sup>L</sup>

\$WDFKPHQW<sup>-</sup> & L ± L OLVFHODQHRXV<sup>L</sup> :DWH<sup>L</sup> ,QYHQWRU\ L 6XPPDU\ L

L

L

FF L L L (ULF<sup>L</sup> 1RDPN<sup>L</sup> L 1'(3L %XUHDXL<sup>L</sup> RI<sup>L</sup> :DWH<sup>L</sup> ODQDJHPHQW<sup>-</sup> ± L YLD<sup>L</sup> HOHFWURQLF<sup>L</sup>

1DWKDQ<sup>L</sup> %ORPN<sup>L</sup> L %3L ± L YLD<sup>L</sup> HOHFWURQLF<sup>L</sup>

5HJLQDOG<sup>L</sup> ,ODR<sup>L</sup> L \$WODQWLFL 5LFK1LHOG<sup>L</sup> &RPSDQ\ L ± L YLD<sup>L</sup> HOHFWURQLF<sup>L</sup> L

\$GDL<sup>L</sup> &RKHQ<sup>L</sup> (VT◀ L 'DYLVL \*UDKOP<sup>L</sup> L 6XKEEV<sup>L</sup> //3L ± L YLD<sup>L</sup> HOHFWURQLF<sup>L</sup>

'DYH<sup>L</sup> OF&DUW<sup>L</sup> &RSSHU<sup>L</sup> (QYLURQPHQWDO<sup>L</sup> &RQXOWLQJ<sup>L</sup> ± L YLD<sup>L</sup> HOHFWURQLF<sup>L</sup>

ODUF<sup>L</sup> /RPEDUGL<sup>L</sup> \$PHF<sup>L</sup> )RWHU<sup>L</sup> :KHCHU<sup>L</sup> (QYLURQPHQW<sup>L</sup> L ,QIUDWULXFWXH<sup>L</sup> L ,QF◀ L ± L YLD<sup>L</sup>

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**ATTACHMENT A**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - LABORATORY ANALYTICAL RESULTS**  
**OF ASB TREATMENT GENERATED SOLIDS**

Draft - Provisional Data

Parameter	August 28, 2017 274ASPSludge935 Bin 1 Composite				Regulatory Threshold <sup>1</sup>		
	Total Metals (mg/kg)	SPLP (mg/L)	STLC (mg/L)	TCLP (mg/L)	TTLC (Regulatory Limits for Total Metals) (mg/kg)	STLC (Regulatory Limits) (mg/L)	TCLP (Regulatory Limits) (mg/L)
Aluminum	11,000	0.63 J	800 B	4.9 B	NA	NA	NA
Antimony	< 10	< 0.20	< 0.20	< 0.20	500	15	NA
Arsenic	11	< 0.20	< 0.20	< 0.20	500	5	5
Barium	130	< 0.20	0.25	0.11 J	10,000	100	100
Beryllium	0.71	< 0.080	0.15	< 0.080	75	0.75	NA
Cadmium	< 0.50	< 0.10	< 0.10	< 0.10	100	1	1
Chromium	15.0	< 0.10	0.15	< 0.10	500 (2,500) <sup>2</sup>	5 (560) <sup>3</sup>	5
Cobalt	4.7	< 0.20	< 0.20	< 0.20	8,000	80	NA
Copper	11	< 0.20	< 0.20	< 0.20	2,500	25	NA
Iron	9,800	< 0.80	1200	530	NA	NA	NA
Lead	6.2	< 0.10	< 0.10	< 0.10	1,000	5	5
Mercury	< 0.020	< 0.0020	< 0.0020	< 0.0020	20	0.2	0.2
Molybdenum	< 2.0	< 0.40	< 0.40	< 0.40	3,500	350	NA
Nickel	12	< 0.20	2.5 B	0.064 J	2,000	20	NA
Selenium	< 3.0	< 0.10	0.44	< 0.10	100	1	1
Silver	< 1.5	< 0.20	< 0.20	< 0.20	500	5	5
Thallium	< 10	< 0.10	< 0.20	< 0.10	700	7	NA
Vanadium	24	< 0.20	0.10 J	< 0.20	2,400	24	NA
Zinc	26	< 0.40	< 0.40	0.15 J	5,000	250	NA
pH (s.u.)	8.10				Corrosivity criteria for pH = ≤ 2.0 or ≥ 12.5 <sup>1</sup>		
Percent Moisture	90.6						

Notes:

1. Title 22 California Code of Regulations, Section 66261.24 (a)(2): Samples were tested for waste extraction test, solubility, and total concentrations. If the results of the STLC or TTLC equal or exceed their respective regulatory thresholds, the waste is a hazardous waste.

2. Concentration limit for total chromium and/or chromium (III) is 2,500 mg/L and limit for chromium (VI) is 500 mg/L.

3. The federal hazardous waste level for soluble chromium is 5 mg/L. California has a Waste Extraction Test (WET) soluble level for chromium (III) (560 mg/L) and chromium (VI) (5 mg/L). To use the 560 mg/L regulatory threshold, it must be demonstrated first that the waste is not a Resource Conservation Recovery Act (RCRA) waste.

Abbreviations:

"<" = Constituents that were not detected are listed as "<" the reporting limit

J = Results noted with "J" are an estimated value or were less than the reporting limit but greater than or equal to the method detection limit.

B = Compound was found in the blank and in the sample

mg/L = milligrams per liter

mg/kg = milligrams per kilogram

NA = Not applicable

SPLP = Synthetic Precipitation Leaching Procedure

STLC = Soluble Threshold Limit Concentration

TCLP = Toxicity Characteristic Leaching Procedure

TTLC = Total Threshold Limit Concentration

**ATTACHMENT B**  
**HIGH DENSITY SLUDGE - LABORATORY ANALYTICAL RESULTS**  
**OF HDS TREATMENT GENERATED SOLIDS**

Draft - Provisional Data

Parameter	September 18, 2017 249HDSSLUDGE745 Composite				Regulatory Threshold <sup>1</sup>		
	Total Metals (mg/kg)	SPLP (mg/L)	STLC (mg/L)	TCLP (mg/L)	TTLC (Regulatory Limits for Total Metals) (mg/kg)	STLC (Regulatory Limits) (mg/L)	TCLP (Regulatory Limits) (mg/L)
Aluminum	18,000	1.3	590	39	NA	NA	NA
Antimony	< 20	< 0.20	< 0.20	< 0.20	500	15	NA
Arsenic	100	< 0.20	0.13 J	< 0.20	500	5	5
Barium	3.6	< 0.20	< 0.20	0.086 J	10,000	100	100
Beryllium	1.9	< 0.080 ^	0.12	< 0.080 ^	75	0.75	NA
Cadmium	1.2	< 0.10	0.074 J	< 0.10	100	1	1
Chromium	14	< 0.10	0.21	< 0.10	500 (2,500) <sup>2</sup>	5 (560) <sup>3</sup>	5
Cobalt	220	< 0.20	18	3.4	8,000	80	NA
Copper	28	< 0.20	1.2	< 0.20	2,500	25	NA
Iron	84,000	< 0.80 *	1200	0.96 B	NA	NA	NA
Lead	3.2 J	< 0.10	< 0.10	< 0.10	1,000	5	5
Mercury	< 0.020	< 0.0020	0.0011 J	< 0.0020	20	0.2	0.2
Molybdenum	< 4.0	< 0.40	< 0.40	< 0.40	3,500	350	NA
Nickel	490	< 0.20	35 B	10	2,000	20	NA
Selenium	4.1 J	< 0.10	< 0.20	< 0.10	100	1	1
Silver	< 3.0	< 0.20	< 0.20	< 0.20	500	5	5
Thallium	< 20	< 0.10	< 0.20	< 0.10	700	7	NA
Vanadium	18	< 0.20	< 0.20	< 0.20	2,400	24	NA
Zinc	120	< 0.40	2.3	0.47	5,000	250	NA
pH (s.u.)	8.60			Corrosivity criteria for pH =≤ 2.0 or ≥ 12.5 <sup>1</sup>			
Percent Moisture	59.0						

Notes:

1. Title 22 California Code of Regulations, Section 66261.24 (a)(2): Samples were tested for waste extraction test, solubility, and total concentrations. If the results of the STLC or TTLC equal or exceed their respective regulatory thresholds, the waste is a hazardous waste.

2. Concentration limit for total chromium and/or chromium (III) is 2,500 mg/L and limit for chromium (VI) is 500 mg/L.

3. The federal hazardous waste level for soluble chromium is 5 mg/L. California has a Waste Extraction Test (WET) soluble level for chromium (III) (560 mg/L) and chromium (VI) (5 mg/L). To use the 560 mg/L regulatory threshold, it must be demonstrated first that the waste is not a Resource Conservation Recovery Act (RCRA) waste.

Abbreviations:

"<" = Constituents that were not detected are listed as "<" the reporting limit

"\*" = ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.

"\*\*" = LCS or LCSD is outside acceptance limits.

J = Results noted with "J" are an estimated value or were less than the reporting limit but greater than or equal to the method detection limit.

B = Compound was found in the blank and in the sample

mg/L = milligrams per liter

mg/kg = milligrams per kilogram

NA = Not applicable

SPLP = Synthetic Precipitation Leaching Procedure

STLC = Soluble Threshold Limit Concentration

TCLP = Toxicity Characteristic Leaching Procedure

J ddJ ↑ ,D EdL ↑ L  
 D/^↑ >> E Kh^L tJ ^d L /Es EdKZzL ^hDDJ Zz  
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±   → L	↑ ↑ 3RO\ L 'UXPL	tJ J L	→ ↑ ¶ T ↑ ¶ → L	8VHG L /LPH L %DJV L	6ROLGL		1RQ+ +D] L	
±   ← L	↑ ↑ 3RO\ L 'UXPL	tJ J L	→ ↑ ¶ → ↑ ¶ → L	8VHG L /LPH L %DJV L	6ROLGL		1RQ+ +D] L	
±   L	↑ ↑ 3RO\ L 'UXPL	tJ J L	→ ↑ ¶ ← ↑ ¶ → L	2LO\ L GHEULV L	6ROLGL		1RQ+ +D] L	
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± ← !! L	↑ ↑ 3RO\ L 'UXPL	tJ J L	← ↑ ±   ↑ ¶ → L	8VHG L /LPH L %DJV L	6ROLGL		1RQ+ +D] L	
± ← ± L	↑ ↑ 3RO\ L 'UXPL	tJ J L	← ↑ ¶ T ↑ ¶ → L	8VHG L /LPH L %DJV L	6ROLGL		1RQ+ +D] L	
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± ←   L	↑ ↑ 3RO\ L 'UXPL	tJ J L	← ↑ ± T ↑ ¶ → L	8VHG L 33( L	6ROLGL		1RQ+ +D] L	
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± ←   L	↑ ↑ 3RO\ L 'UXPL	tJ J L	← ↑ ± ← ↑ ¶ → L	8VHG L /LPH L %DJV L	6ROLGL		1RQ+ +D] L	
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± ← L	↑ ↑ 3RO\ L 'UXPL	tJ J L	↓ ± ↑ ¶ → L	8VHG L /LPH L %DJV L	6ROLGL		1RQ+ +D] L	

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